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EXAMINER

SHAPIRO, LEONID

ART UNIT

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2629

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/722,594	Applicant(s) OUE ET AL.	
	Examiner Leonid Shapiro	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 7, 8, 18 and 23-30 is/are withdrawn from consideration.
- 5) ☒ Claim(s) ~~20-22, 31-38 and 40~~ is/are allowed. 20-22, 31-35, 36-20, 37-20, 38-20, 40
- 6) ☒ Claim(s) 1-6, 9-17, 19, 36 and 38 is/are rejected.
- 7) ☒ Claim(s) 37-2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_, is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Election/Restrictions***

1. Claims 7-8, 18, 23-30 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 09/16/06.

Notice that claim 8 depends on claim 7 and claims 24-30 depend on claim 23.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear what is "...at least an element other than the electrodes..." as recited in the newly introduced limitation of independent claim 1.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. Claims 1-6,14,16-17,19,39 are rejected under 35 U.S.C. 103(a) as being as being unpatentable over Machida et al. (US Patent No. 6,753,844 B2) in view of Yan et al. (6,329,623 B1).

As to claim 1, as best understood by examiner, Machida et al. teaches a display device (See Col. 1, Lines 8-11), including a pair of substrates opposed to each other and provided with electrodes (See Fig. 1, items 26,28,32,34, Col. 9, Lines 16-31), at least one of substrates is light-transmissive and at least one surface of the substrates is provided an electrode (See Fig. 1, items 26,28, Col. 9, Lines 16-18), a spacer disposed between the substrates for retaining a space having a desired width (See Fig. 1, item 38, Col. 9, Lines 63-67), and at least one kind of group of electrostatic particles contained in the space between the substrates (See Fig. 1, items 22,24, Col. 9, Lines 11-15), the device being configured to display an image corresponding to an image signal voltage applied to the electrode of the substrates by causing the group of particles to travel in the space between the substrates by an electric field produced by the image signal voltage (See Fig. 1, items 28,34, Col. 9, Lines 26-34 and Col. 3, Lines 48-58),

comprising:

a particle utilization-promoting means for preventing the number of particles contributing to the display from decreasing, the particle utilization-promoting means provided so as to face the space in which the group of particles travel (See Fig. 1, item 28, Col. 9, Lines 33-36 and Col. 3, Lines 18-27).

Machida et al. does not disclose at least an element other than the electrodes provided on the pair of substrates.

Yan et al. teaches at least an element other than the electrodes provided on the pair of substrates (fig. 2, item 29, Col. 3, lines 16-20).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teachings of Yan et al. into Machida et al. system in order to divert charged particles to electrode (See from Col. 1, Line 67 to col. 2, lines 4 in the Yan et al. reference).

As to claim 2, Machida et al. teaches a display device (See Col. 1, Lines 8-11), including a pair of substrates opposed to each other and provided with electrodes (See Fig. 1, items 26,28,32,34, Col. 9, Lines 16-31), at least one of substrates is light-transmissive and at least one surface of the substrates is provided an electrode (See Fig. 1, items 26,28, Col. 9, Lines 16-18), a spacer disposed between the substrates for retaining a space having a desired width (See Fig. 1, item 38, Col. 9, Lines 63-67), and at least one kind of group of electrostatic particles contained in the space between the substrates (See Fig. 1, items 22,24, Col. 9, Lines 11-15), the device being configured to display an image corresponding to an image signal voltage applied to the electrode of the substrates by causing the group of particles to travel in the space between the substrates by an electric field produced by the image signal voltage (See Fig. 1, items 28,34, Col. 9, Lines 26-34 and Col. 3, Lines 48-58),  
comprising:

a vibration-generating portion provided so as to face a space in which the group of particles travel (See Fig. 1, item 28, Col. 9, Lines 33-36 and Col. 3, Lines 18-27).

Machida et al. does not disclose at least an element other than the electrodes provided on the pair of substrates to generate a mechanical vibration.

Yan et al. teaches at least an element other than the electrodes provided on the pair of substrates to generate a mechanical vibration (fig. 2, item 29, Col. 3, lines 16-20).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teachings of Yan et al. into Machida et al. system in order to divert charged particles to electrode (See from Col. 1, Line 67 to col. 2, lines 4 in the Yan et al. reference).

As to claim 3,6 Machida et al. teaches the vibration-generating portion is provided on at least one of the substrates so as to face the space in which the group of particles travel (See Fig. 1, item 28, Col. 9, Lines 33-36 and Col. 3, Lines 18-27).

As to claims 4-5, Machida et al. teaches a first electrode and a second electrode to which the image signal voltage is applied are provided on one of the substrates (See Fig. 1, item 28, Col. 9, Lines 33-36 and Col. 3, Lines 18-27).

As to claim 14, Machida et al. teaches the group of particles are colored with at least one color (See Fig. 1, item 22, Col. 9, Lines 11-15).

As to claim 16, Machida et al. teaches vibration-generating portion also serves as at least one of the substrates (See Fig. 1, item 28, Col. 9, Lines 32-36).

As to claim 17, Machida et al. teaches in the first display state, a first image signal voltage is applied to the electrodes provided on the substrates to form a first electric field (See Fig.9, item DISPLAYING WHITE);

in the second display state, a second image signal voltage is applied to the electrodes provided on the substrates to form a second electric field having a different direction from that of the first electric field (See Fig.9, item DISPLAYING WHITE); and

an application of a high-frequency sine wave to the vibration-generating portion and an application of the second image signal voltage to the electrodes provided on the substrates are carried out when performing rewriting from the first display state to the second display state (See Fig. 9, item INITIALIZING DRIVE, from Col. 11, Line 46 to Col.12, Line 13).

As to claim 19, Machida et al. teaches the application of the high-frequency sine wave voltage and the application of the second image signal voltage are carried out in different timing. (See Fig. 9, items INITIALIZING, WHITE).

As to claim 39, Machida et al. teaches a method of manufacturing a display device (See Col. 1, Lines 8-11), including a pair of substrates opposed to each other and provided with electrodes (See Fig. 1, items 26,28,32,34, Col. 9, Lines 16-31), at least one of substrates is light-transmissive and at least one surface of the substrates is provided an electrode (See Fig. 1, items 26,28, Col. 9, Lines 16-18), a spacer disposed between the substrates for retaining a space having a desired width (See Fig. 1, item 38, Col. 9, Lines 63-67), and at least one kind of group of electrostatic particles

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contained in the space between the substrates (See Fig. 1, items 22,24, Col. 9, Lines 11-15), the device being configured to display an image corresponding to an image signal voltage applied to the electrode of the substrates by causing the group of particles to travel in the space between the substrates by an electric field produced by the image signal voltage (See Fig. 1, items 28,34, Col. 9, Lines 26-34 and Col. 3, Lines 48-58), the method comprising:

a step to contain the group of particles in the space between the substrates; (See Figs. 8-9, items DISPLAYING WHITE, Col. 11, Lines 46-65); and

a step to generate vibration by the vibration-generating portion after the particles containing step (See Figs. 8-9, items INITIALIZING DRIVE, Col. 12, Lines 2-13).

Machida et al. does not disclose at least an element other than the electrodes provided on the pair of substrates to generate a mechanical vibration.

Yan et al. teaches at least an element other than the electrodes provided on the pair of substrates to generate a mechanical vibration (fig. 2, item 29, Col. 3, lines 16-20).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teachings of Yan et al. into Machida et al. system in order to divert charged particles to electrode (See from Col. 1, Line 67 to col. 2, lines 4 in the Yan et al. reference).



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3. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machida et al., Yan et al. in view of Holman et al. (US Patent No. 6,831,769 B2).

As to claim 9, Machida et al., Yan et al. do not disclosed a gas phase space.

Holman et al. teaches a gas phase space (See Col. 1, Lines 41-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teachings of Holman et al. into Machida et al., Yan et al. system in order to reduce cost.

As to claim 10, Holman et al. teaches the space in which the group of particles travel is a liquid phase space filled with an insulative solvent (See Fig.1, items 140,170, from Col. 12, Line 62 to Col. 13, Line 2).

As to claim 11, Holman et al. teaches capsules each containing the group of particles and the insulative solvent ( in the reference is equivalent to polymeric binder) are disposed in the space between the substrates. (See Fig.1, items 140,170, from Col. 12, Line 67 to Col. 13, Line 2).

As to claims 12-13, Machida et al. teaches the particles composing the group of particles are aligned by an electric field applied between the electrodes of the substrates according to the image signal voltage (See Fig. 1, items 28,34, Col. 9, Lines 26-34 and Col. 3, Lines 48-58).

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Machida et al., Yan et al. in view of Hasegawa et al. (US Patent No. 6,373,461 B21).

Machida et al., Yan et al. do not disclosed vibration-generating portion includes of a piezoelectric material.

Hasegawa et al. teaches a vibration-generating portion includes of a piezoelectric material (See Fig. 4, item 208, Col. 7, Lines 36-47).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teachings of Hasegawa et al. into Machida et al., Yan et al. system in order to miniaturize (See Col. 1, Lines 49-53 in the Hasegawa et al. reference).

5. Claim 36-2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Machida et al., Yan et al. in view of Harada et al. (US Patent No. 6,816,146 B2).

Machida et al., Yan et al. do not disclosed a porous particles.

Harada et al. teaches porous particles (See Col. 7, Lines 17-28).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teachings of Harada et al. into Machida et al., Yan et al. system in order to increase contrast (See Col. 4, Lines 10-14 in the Harada et al. reference).

6. Claim 38-2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Machida et al., Yan et al. in view of Sakamaki et al. (US Patent No. 6,836,304 B2).

Machida et al., Yan et al. do not disclosed the surfaces the particles, or at least a portion of the surface of a member on which the particles adhere are subjected to a water-repelling treatment.

Sakamaki et al. teaches the surfaces the particles, or at least a portion of the surface of a member on which the particles adhere are subjected to a water-repelling treatment (See Fig. 42C, item 50a, Col. 34, Lines 61-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teachings of Sakamaki et al. into Machida et al., Yan et al. system in order to display image repeatedly (See Col. 1, Lines 10-14 in the Sakamaki et al. reference).

***Allowable Subject Matter***

7. Claims 20-22, 31-35, 36-20,37-20,38-20, 40 are allowed.

Relative to independent claims 20,40 the major difference between the teaching of the prior art of record (Machida et al.) and the instant invention is that a partition wall-side electrode provided on the partition wall for each of the pixels and connected to the voltage applying means.

Claims 21-22, 31-35, 36-20,37-20,38-20 depend on claim 20.

8. Claim 37-2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Relative to claim 37-2 the major difference between the teaching of the prior art of record (Machida et al.) and the instant invention is that at least one kind of the particles is composed of particles composed of core particles and

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micro-particles having a diameter of from about 1/1000 to about 1/100 of the diameter of the core particles and fixed to the core particles in a manner to cover the surface of the core particles.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-6,9-17,19,41-42 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Telephone Inquire***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LS  
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